D. the middle of the Tower of *Montlehery.*

E. the top of the Pavillon of *Malvoyſin.*

F. a pole placed for this purpoſe on the ruins of the Tower of *Montjay,* with a lock of hay put upon it, that it might be ſeen at a greater diſtance.

G. the middle of the Hummock of *Mareuil*, where it was requiſite to have a fire made, to diſtinguiſh it at a diſtance.

H. the middle of the great Oval Pavillon of the Caſtle of *Dammartin.*

I. the Tower of St. *Sampſon* in *Clermont.*

K. the Mill of *Jonquieres* near *Compiegne.*

L. the Tower of *Coyvrel.*

M. a little Tree on the hill of *Boulogne* near *Montdidier.*

N. the Tower of *Sourdon.*

O. a little forked Tree upon the point of the *Griffon* neer *Villeneuve St. George.*

P. the Tower of *Montmartre.*

Q. the Tower near St. *Chriſtopher* at *Senlis.*

Thus we have given you, we hope, ſome ſatisfaction as to this point, at leaſt as to the material parts of it. As to all the particular niceties, (which it would be too tedious to deſcribe) the Book it ſelf, which ſurely ſome time or other will come abroad, may render that ſatisfaction compleat.

Mean time, I would by no means, that this ſhould put a ſtop to the Ingenuity and Induſtry of our Philoſophical Friends here in *England*, or deprive either them of the pleaſure of comparing their exactneſs with that of M. *Picarts*, or the world of the advantage of having ſo important a Problem reſolved by divers Artiſts in different Countries, by different wayes; that ſo, the whole comming to be reflected upon, one may be able to conclude from the accurateneſs of the Obſervers, who they are that are come the neareſt to truth in their Obſervations.

An Extract of the French Journal des Scavans, *concerning a New Invention of Monſieur* Chriſtian Hugens de Zulichem, *of very exact and portative Watches.*

THE Watches of this Invention being made in ſmall, ſhall ſerve for very exact Pocket-watches, and when made greater, ſhall

ſhall be uſeful every where elſe, and particularly to find the Longitudes both by Sea and Land, foraſmuch as their movement is regulated by a principle of Equality, as that of Pendulum's is Cycloid, and that no kind of carriage ſhall be able to ſtop them.

The ſecret of the Invention conſiſts in a Spiral Spring, faſtned by its innermoſt end to the Axis or Arbre of a poiſed Ballance (bigger and heavier then is uſual) which turns upon its pivots; and by its other end to a piece that is faſt to the watch-plate. Which ſpring, when the Ballance-wheel is once ſet a going, alternatly ſhuts and opens its ſpires, and with the ſmal help it hath from the watch-wheels, keeps up the motion of the Ballance-wheel, ſo as that, though it turn more or leſs, the times of its reciprocations are always equal to one another.

In Fig. 4. Tab. 1. the upper plate of the Watch is A B: The Circular Ballance-wheel, C D, of which the Arbre is E F: The Spring turned ſpirally, G H M, faſtned to the Arbre of the Ballance-wheel in M, and to the piece that is faſt to the Watch-plate, in G; all the ſpires or windings of the Spring being free without touching any thing. N O P Q is the Cock, in which one of the pivots of the Ballance-wheel turns; R S is one of the indented Wheels of the Watch, having a ballancing motion, which the Ballance-Wheel of rencontre gives to it. And this Wheel R S catches in the pinion T, which holds on the Arbre of the Ballance, of which by this means the motion is entertained as much as is neceſſary.

An Extract of a Letter, lately written to the Publiſher by Dr. *Swammerdam*, of an unuſual Rupture of the Meſentery.

Cùm ad vos iret Cl. Dn. C, & quæreret ex me an aliquid literarum per ipſum ad Te curare vellem, nec ſuppeteret aliud ſcribendi argumentum, præſentem caſum rariorem vobis communicare volui.

Figura adjecta repræſentat Convolvulum ſive Affectum Iliacum lethalem, ex ruptura & circumvolutione Meſenterii *inteſtina conſtringentis, ortum.*

* *A A. Inteſtinum Ileum, chylo, flatu & ingeſtis mirum in modum turgens atq; inflammatum.* * V. Tab. 2

B B. Meſenterium dirruptum, conſtituens vinculum quoddam, inteſtina funeſto fato circumligans. C C.

C C. Notatum Vinculum, ex rupto Meſenterio ortum, ac, capreoli ferè in modum, inteſtina nectens.

D D. Vinculum illud ſeorſim delineatum, unà cum ejus capreolo, duabus circumductionibus conſtans.

E E. Convolvulus inteſtini, ſeu Ilei pars, vinculo fortiter coarctata, ac ſphacelo proxima; à quo alvus omninò adſtricta fuit, adeò ut tenuium inteſtinorum contenta, vomitu ferè continuo, ſurſùm propulſa fuerint.

F. Ilei pars, violentâ illâ at incomprehenſibili trajectione inteſtini per ligamentum D D contra naturam extenſa, atq; inteſtinum quodàm cæcum mentiens.

G. Ilei extremum, ubi in Colon degenerat.

H. Colon modicè contractum, & naturaliter ſe habens.

L. Inteſtinum cæcum.

Hanc obſervationem paucis abhinc diebus, præſentibus D D de Penyn & Dortmont, Noſocomii noſtri Medicis, nec non Clar. viro D. Oort, habuimus. Vale. Dab. raptim, Amſtelodami, 9 Octob. 1674.

A Letter of Mr. Martin Liſter, *containing his Obſervations of the* Aſtroites *or* Star-ſtones; *communicated to the Publiſher Jan.* 19. 167$\frac{3}{4}$.

SIR, You are pleaſed to tell me, that my Notes concerning certain Stones figured like Plants, found in the mountains of *Craven*, were well received *. This encourages me to give you the trouble of what I have obſerv'd of the *Aſtroites*; which are ſtones alſo pointed like the other, but not found, that I know of, in the ſame Rocks. And we muſt croſs the plain Country, and ſeek for them hard under the *Yorkſhire* Woolds: For, what ſtore I cou'd procure of them, were brought me from *Eugthorp* and *Leppington*. At the former place, my ſelf have ſeen them digg out of a certain *blew clay* on the banks of a ſmal rivulet, betwixt the Town and the foot of the Woolds. There are plenty of them waſhed into the brook; but the moſt fair and ſolid are thoſe we get out of the Clay.

* See N. 101. of theſe Tracts.

I pretend not, to diſcover to you their Original, no more than I did of the *Entrochi*; but having uſed ſome diligence in cauſing the places, where they are found, to be a litle more ſearched than

is

is uſual, I was by that means furniſh't with a good quantity of them; which gave me the opportunity to make the following Obſervations. What light may be hence had, I leave to more judicious perſons, acknowledging my ſelf at preſent not to be able to demonſtrate (if they are not Stones of their own kind,) what they have been before petrification.

It is very litle and inconſiderable, what any Author, that I have yet ſeen, hath ſaid of them; ſave a very brief deſcription of them in *Geſner*, and the like in *Wormius*; in the reſt, all is tranſcribed.

The Matter and ſubſtance of theſe Stones, if broken, is flint-like, of a dark ſhining poliſture; but much ſofter, and eaſily corroded by an acid *Menſtruum*. Vinegar, indeed, makes them creep; but a ſtronger ſpirit, as of Niter, toſſes them. I doubt not, but they will readily calcine, as the *Belemnites*, to a very ſtrong and white Lime.

Theſe Stones (as we now find them) are all *Fragments*; as we have noted of the *Entrochi*: Either one ſingle joint, or 2, 3, or more joints ſet together, making a pentagonous Cylindrical figure or five-ſided column. And I have not yet had any piece much above one inch long, which conſiſted of 18 joints; but I have ſeen one piece, ſomewhat ſhorter than the former, which had 25 joints. Theſe laſt thin-jointed pieces are quite of a different make, as to all circumſtances, from the other, as will appear.

Every joint conſiſts of 5 Angles, which are *either* drawn out and ſharp, and conſequently the ſides of pieces, made up of ſuch joints, are deep-channel'd; (and this is the condition of ſome of the thick-jointed pieces, as well as of all the thin-jointed ones;) *or* the Angles are blunt and round, and the ſides plain or very litle hollowed. There are as big, and as ſmal pieces of this ſort, as of any other more ſharp-angled; and therefore I account them a 3d. ſpecies of *Star-ſtone*. And of this ſort was, I gueſs, that piece which *Wormius* deſcribes; which therefore, he ſaith, is more like the blown Flower of *Pentaphyllum*, than a *Star*. Beſides, the manner of the engraving of the joints in every one of the 3 reſpective ſpecies is alſo very different, as will be declared.

Where the joints are thin or deep, they are *ſo* equally throughout the whole piece; yet are there ſome, but very few, exceptions to this alſo, of pieces which conſiſt of joints of unequal thick-

neſs,

neſs. Many of the thick-jointed pieces have certain joints a thought broader, or a very litle ſtanding out at the Angles, and thereby the joints are diſtinguiſh't into certain Conjugations of 2, 3, or more joints: And theſe Conjugations are very obſervable in the thin-jointed ſtones, and are marked out with a ſett of Wyers; of which by and by.

The thickeſt piece, which hath yet come to my hands, is not above one inch and a half about, and thoſe very rare too: From which ſize to that of a ſmal pin, I have all the intermediat proporons; and theſe ſo exceeding ſmal pieces are as exactly ſhaped, as the greateſt. Moſt pieces, if not all, of any conſiderable length, are not ſtraight, but viſibly bent and inclining. All the pieces of any ſort are much of an equal thickneſs, or but litle tapering; yet one of the ends, by reaſon of a Top-joint, is viſibly the thickeſt.

This Top joint hath 5 blunt Angles, and is not hatched or engraven, or but very faintly, on the outſide. Every joint elſe of a piece (ſave the top-joint) is an *Intaglia*, and deeply engraven on both ſides alike; and will accordingly ſerve for a Seal. The middle of each angle is hollow, and the edges of the angles are thick furrowed: The terminations of theſe hatchings are the indented ſutures, by which the joints are ſet together; the ridges of one joint being alternately let into the furrows of the other next it. The Hatchings of the flat-ſided pieces are in circular lines; but of the other two ſpecies, they are ſtraight lines, or near the matter.

In the very center of the 5 angles is a ſmal hole, conſpicuous in moſt joints. Note alſo, that in the middle of each joint, betwixt angle and angle; in the very ſuture, is another ſuch like ſmal pin-hole very apparent, if the ſtones be firſt well ſcoured.

Beſides all the former particulars, there may be obſerv'd, in the deep-jointed pieces, juſt under the top-joint, above deſcribed, the *Veſtigia* of certain Wyers rather than branches; and ſometimes 2, 3, or more of the joints of the Wyers yet adhering. Theſe Wyers are ever *five* in number, viz. one in the middle or hollow part betwixt angle and angle. Again, in *thin*-jointed pieces there are ever *five* of theſe Wyers, or a *ſett* of them inſerted into every conjugation of joints; ſo that it were ſome repreſentation of the thing, to imagine the ſtalk of *Aſperula* or *Equiſetum*. Alſo I have ſeen, but that very rarely, (not in one piece amongſt 500,) a ſett of Wyers

Wyers in the middle of a *deep*-jointed piece. One thin-jointed piece I have by me, where a Wyer of 20 joints and upwards (and how much longer they may be, I know not,) lyes double within the hollow ſide, and by that accident was preſerved in its natural place. Further, ſome lumps of Quarry I have from the ſame place above-nam'd, where the Wyers as well as the Stones themſelves are ſeen in long pieces. It is no wonder, that theſe Wyers are knocked off, and but very rarely found adhering to the Stones they belong to, being very ſmall and ſlender, of a round figure and ſmooth-jointed, being ſett together *per harmoniam* and not indented future. Nothing that I can think of, is ſo like theſe Wyers, as the *antennæ* of Lobſters. Laſtly, ſome of theſe Wyers are knotted, and others of them fairly ſubdivided or branched.

I have, by the aſſiſtance of Mr. *Lodge*, illuſtrated all theſe particulars with *Figures*: Of which this is the Explication; * * See Tab. 2.

1. The Top-joint of an *Aſtroites*, figur'd on both ſides; on the one it is deep engraven, on the other the hatches are ſcarce viſible. Alſo the ends of the 5 Angles are very blunt.

2. A ſecond or ſharp-angled joint with fair hatchings on both ſides.

3. A piece with very narrow and ſharp angles. Alſo the Top-joint deſigned, as it naturally appears ſmooth and without hatchings.

4. A round-angled joint.

5. A flat-ſided piece; where the hatchings are ſomewhat Circular.

6. A thin-jointed piece: Where note alſo, that the angles are much narrower, and of a protracted Oval figure.

7. The biggeſt piece I have yet ſeen. Note alſo its bending.

8. The ſmalleſt piece I have yet met with.

9. The longeſt piece; where every 4th joint is a thought bigger or more prominent than the reſt; as in the 7th fig. alſo is well deſigned.

10. A large and round-angled or flat-ſided piece; to which belongs that ſingle joint noted fig. 4.

11. A flat or not hollow-ſided piece; of which ſort alſo is the 5th figure: The 10th and 4th not much differing.

12. A thin-jointed piece; where the conjugations are marked

out by the *veſtigia* of the ſeveral ſets of Wyers or branches.

13. A piece where the joints are un-equal in thickneſs.

14. A piece with ſome part of the Wyers yet adhering in their natural order at the biggeſt end of the piece.

15. A thin-jointed piece; where note on the left ſide a ſingle Wyer accidentally preſerved in its natural place, though ſnapt aſunder.

16. A thick-jointed piece with a ſet of Wyers in the middle of it.

17. A good long piece of a Wyer, and a ſingle joint thereof.

So far Mr. Liſter: To which we cannot but add Mr. *Rays* Notes upon theſe very Obſervations.

I was much taken, (*ſaith he* to Mr. *Liſter*) with your Obſervations concerning the Star-ſtones, and inform'd in ſeveral particulars. For, although I had often ſeen, and my ſelf alſo ſometimes gather'd of thoſe bodies; yet I did never curiouſly note the texture, parts and differences of them. As for their *Original*, if you can allow the *Trochites* and *Entrochi* to have been fragments of Rock-plants, I ſee not, why you ſhould make any difficulty of admitting theſe to have been ſo too; the ſeveral *internodia* being alike thin in both, and the Commiſſures not much different; only the external figure doth not correſpond. But it is to be conſidered, that many of the *Trochites* have a pentagonous hole in the middle of them, which if we admit for the receptacle of the pith, it will be as hard to exemplifie ſuch a figur'd pith, as ſuch a figur'd ſtalk in Land-plants. Your note concerning the Wyers ſpringing out of the furrows or concave angles of ſome of the *internodia*, and encircling the ſtalk like the leaves of *aſperula* or *equiſetum*, was ſurpriſing; and ſeems to me to argue theſe bodies to belong to the *genus* of Vegetables; no leſs than Coral, Coralline, and the ſeveral ſorts of *Pori*; ſome of which are alſo jointed: But no vegetable, either of Land or Sea, that I know of, hath ſuch frequent joints and ſhort or thin *internodia*; and ſo they are things of their own kind, whoſe *ſpecies* is, for ought we know, loſt. If they were Vegetables, I gueſs they were never ſoft; but grew upon the rocks like Coral, and the other Stone-plants, juſt now mention'd; hard as they are.

As for *Equiſetum*, we know, that the Leaves of ſome ſorts of it are jointed, as well as the Stalk: Elſe I know no plant that hath jointed leaves; except ſome ſorts of *Ruſh-graſs*; though thoſe briſtles of *equiſetum* ſurrounding the ſtalk, neither theſe reputed leaves of *Ruſh-graſs* can properly be call'd Leaves, being round, and having no dif-

ference

ference of upper and lower ſuperficies. Now that I have upon this occaſion mention'd *equiſetum*, give me leave to mind you of what I have already publiſh'd to the world; That I have found, on the banks of the river *Tanar* in *Piedmont*, plenty of the fragments of the ſtalks of *equiſetum* perfectly petrified, with litle or no increaſe of bulk, ſo exactly like the plant, that all the *ſtriæ* did all along clearly appear. The colour of theſe petrified ſtalks was white.

An Accompt of two Books:

I. *Les dix Livres d' Architecture de* VITRUVE, *corrigez, & traduits nouvellement en Francois, avec des Notes & des Figures; par* Claude Perrault, *de l' Academie Royale des Sciences, & Medecin dela Faculté de* Paris. *Imprimé à* Paris, 1673. *in fol.*

THE Ingenious and Learned Author of this Verſion of *Vitruvius*, and of the Notes upon him, conſidering with himſelf, that one of the Obſtacles to the advancement of Architecture was the want of being able to draw the Precepts of that Art out of its true and genuine ſource, by reaſon of the great obſcurity of *Vitruvius*, who is the only Writer of the Antients that we have upon this ſubject; did undertake, by a Tranſlation into the French tongue, and by Notes upon the difficult places, and alſo by illuſtrating all with Figures, to render this Author more clear and uſeful to thoſe, that embrace the profeſſion and practice of that Noble Art.

This Interpreter found, that in effect moſt of the matters contained in *Vitruvius* being ſo little underſtood as they are, had need of an Explication more clear and more exact than the Text we have remaining; foraſmuch as the Author did not, in his opinion, ſo much endeavour to make it clear as ſuccinct, in the confidence he had that the *Figures*, added by him would ſufficiently explain the matter, and thereby ſupply what ſeems to be wanting in the Diſcourſe.

Theſe *Figures*, ſaith M. *Perrault*, were loſt by the negligence of the firſt Tranſcribers, that could not deſign, and that probably alſo did not judge them altogether ſo neceſſary; becauſe the con-

Fig. 1.

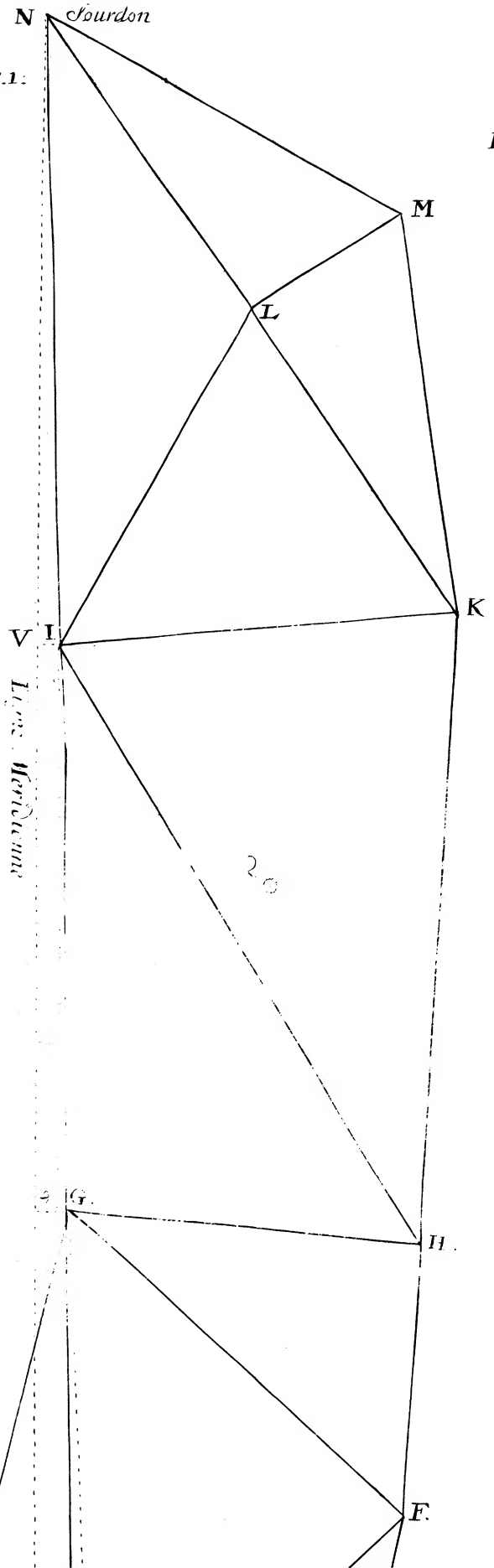
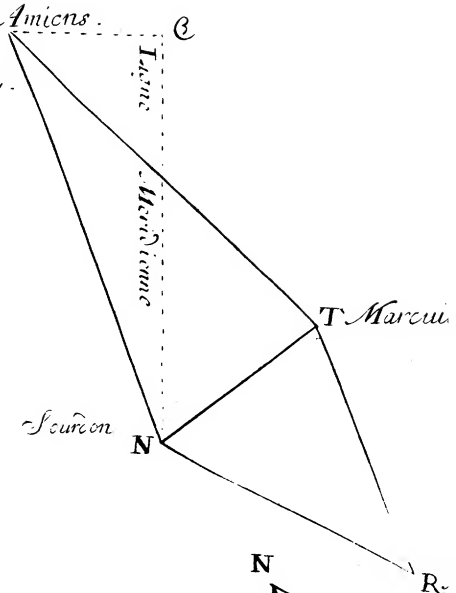


Fig. 2.



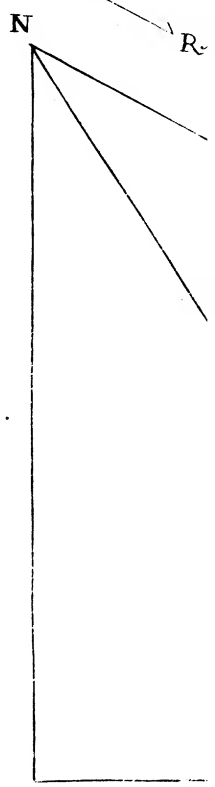


Fig. 3.

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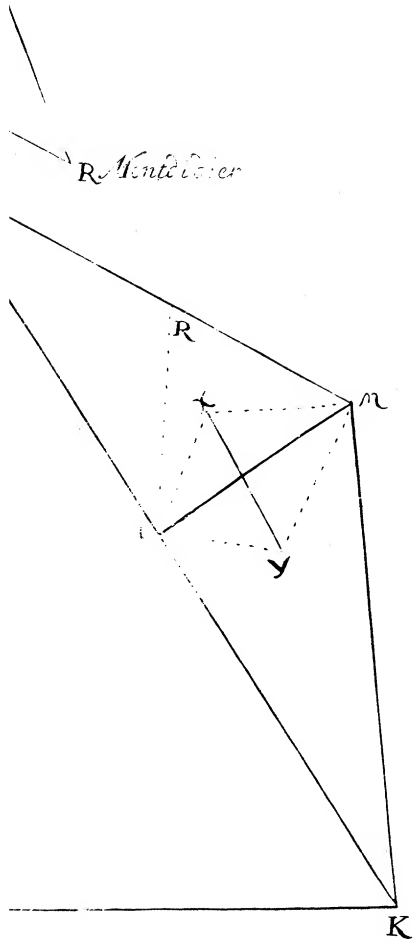

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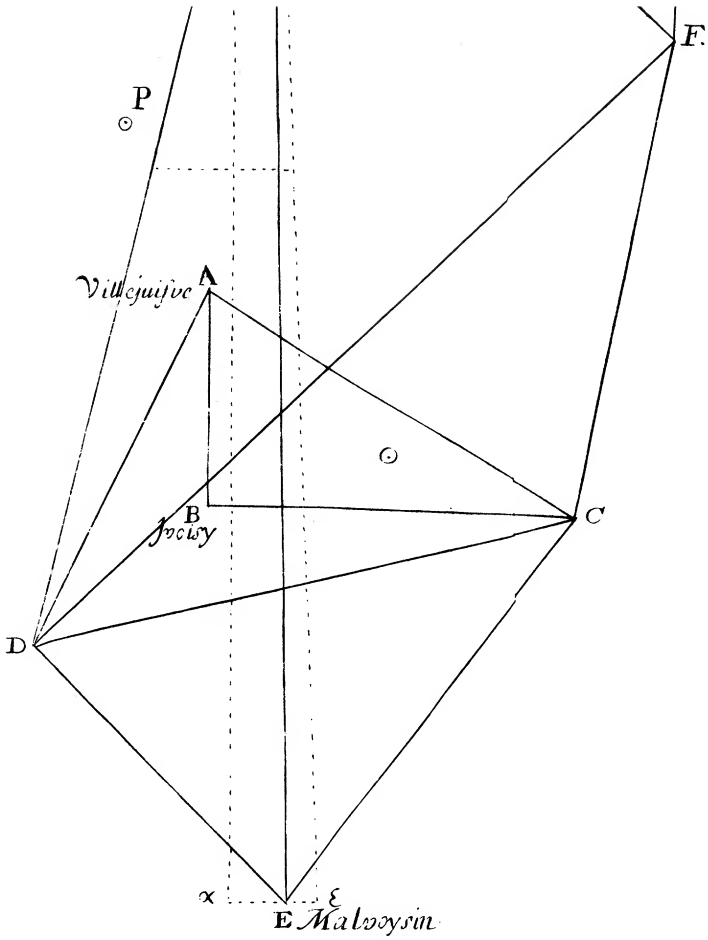
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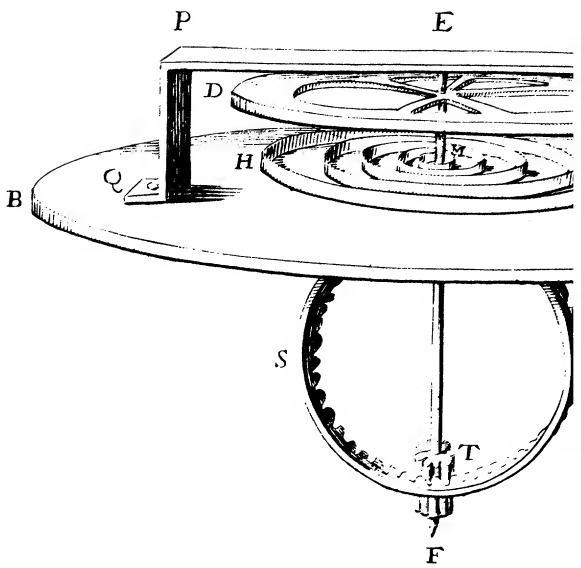
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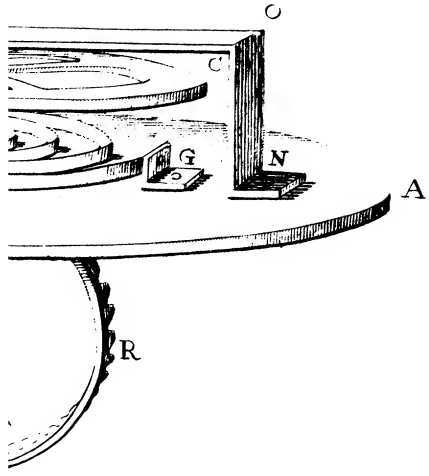
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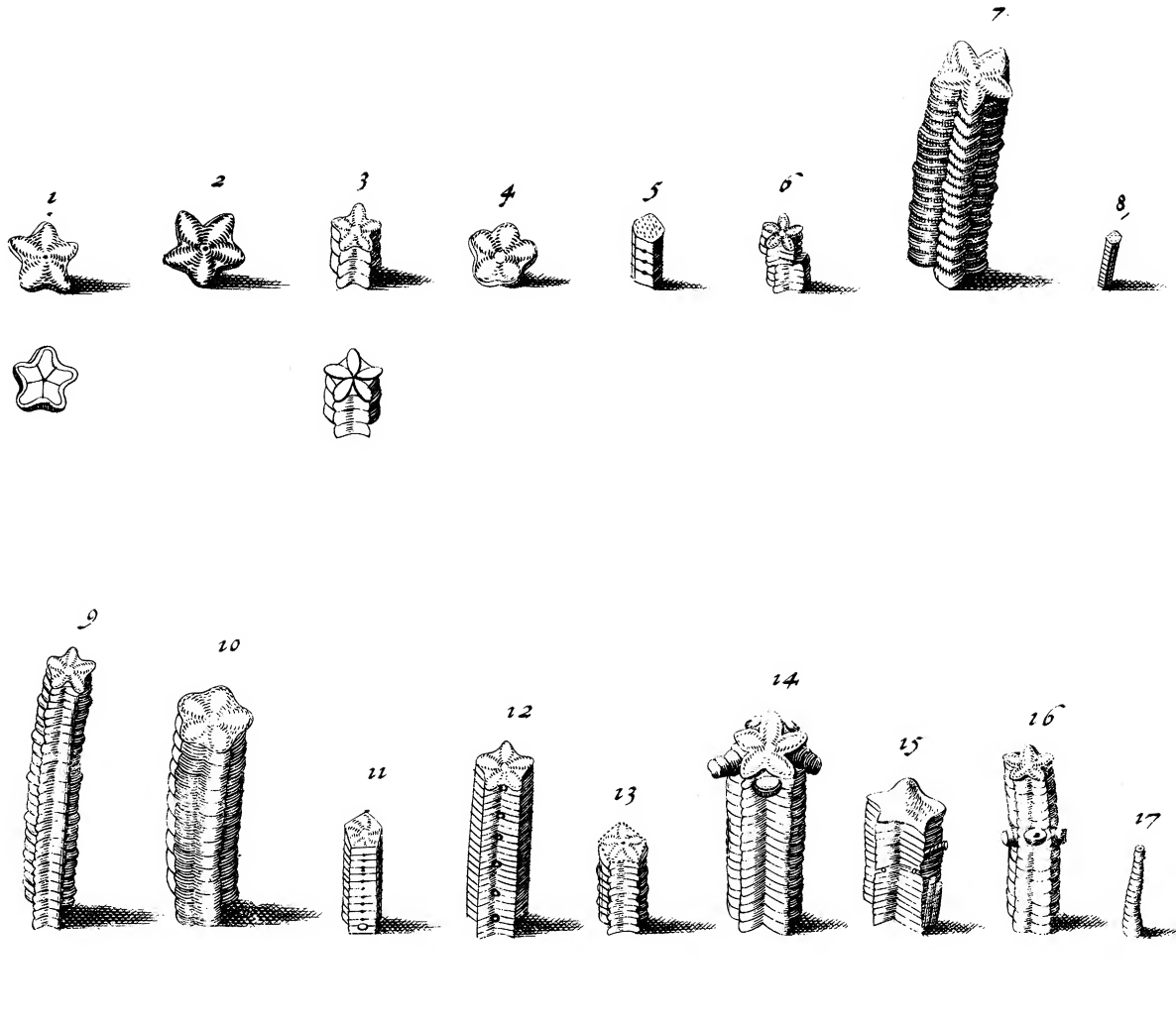
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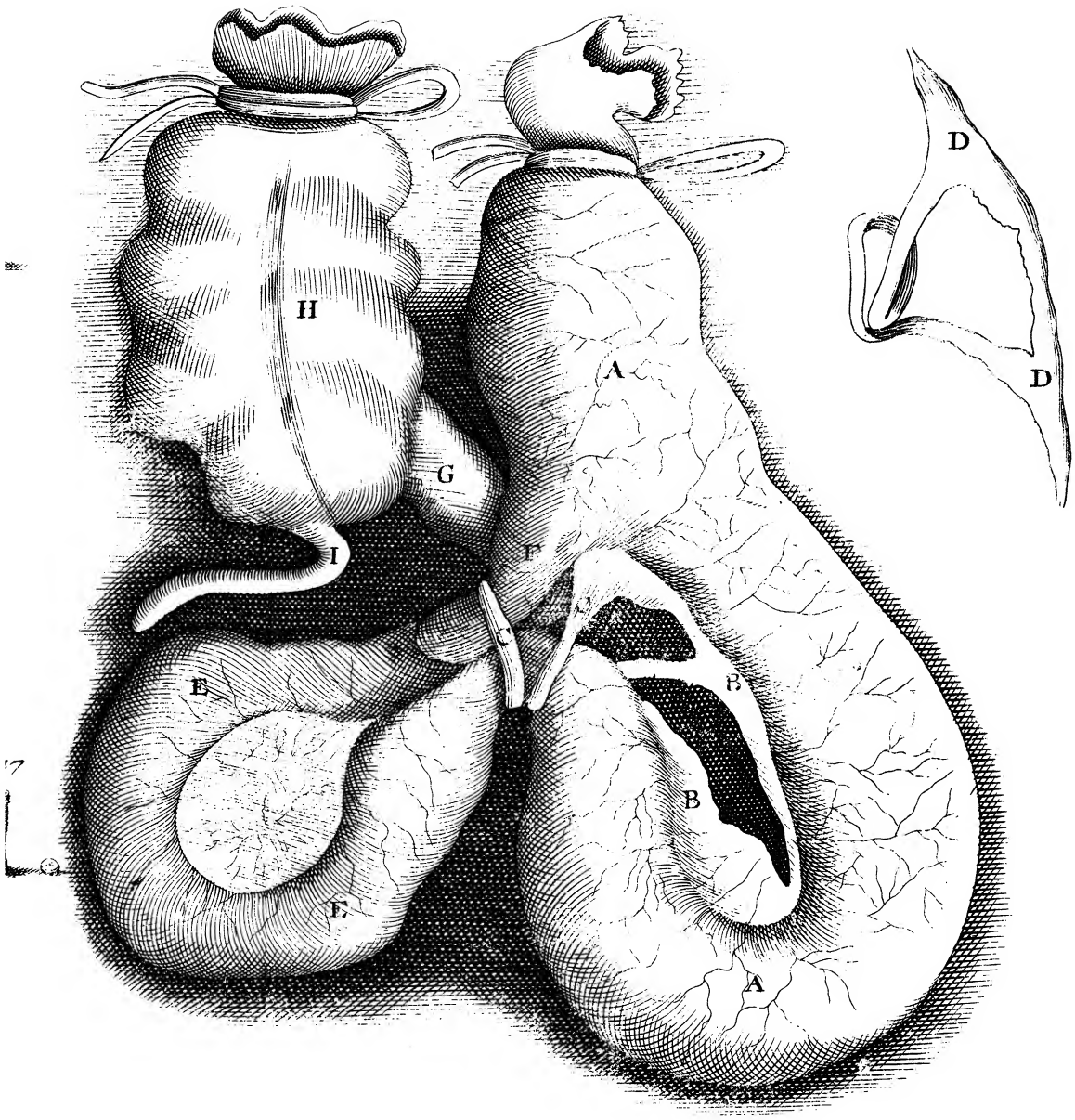
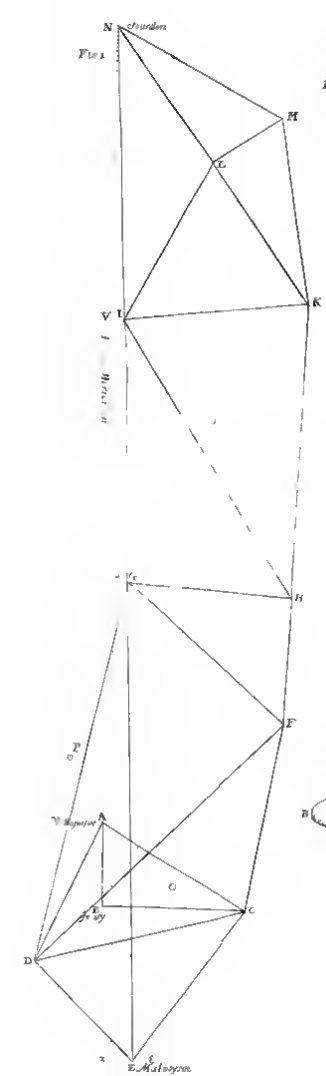
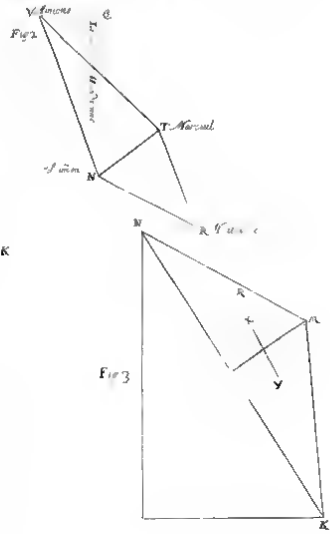
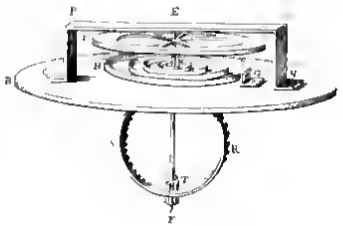
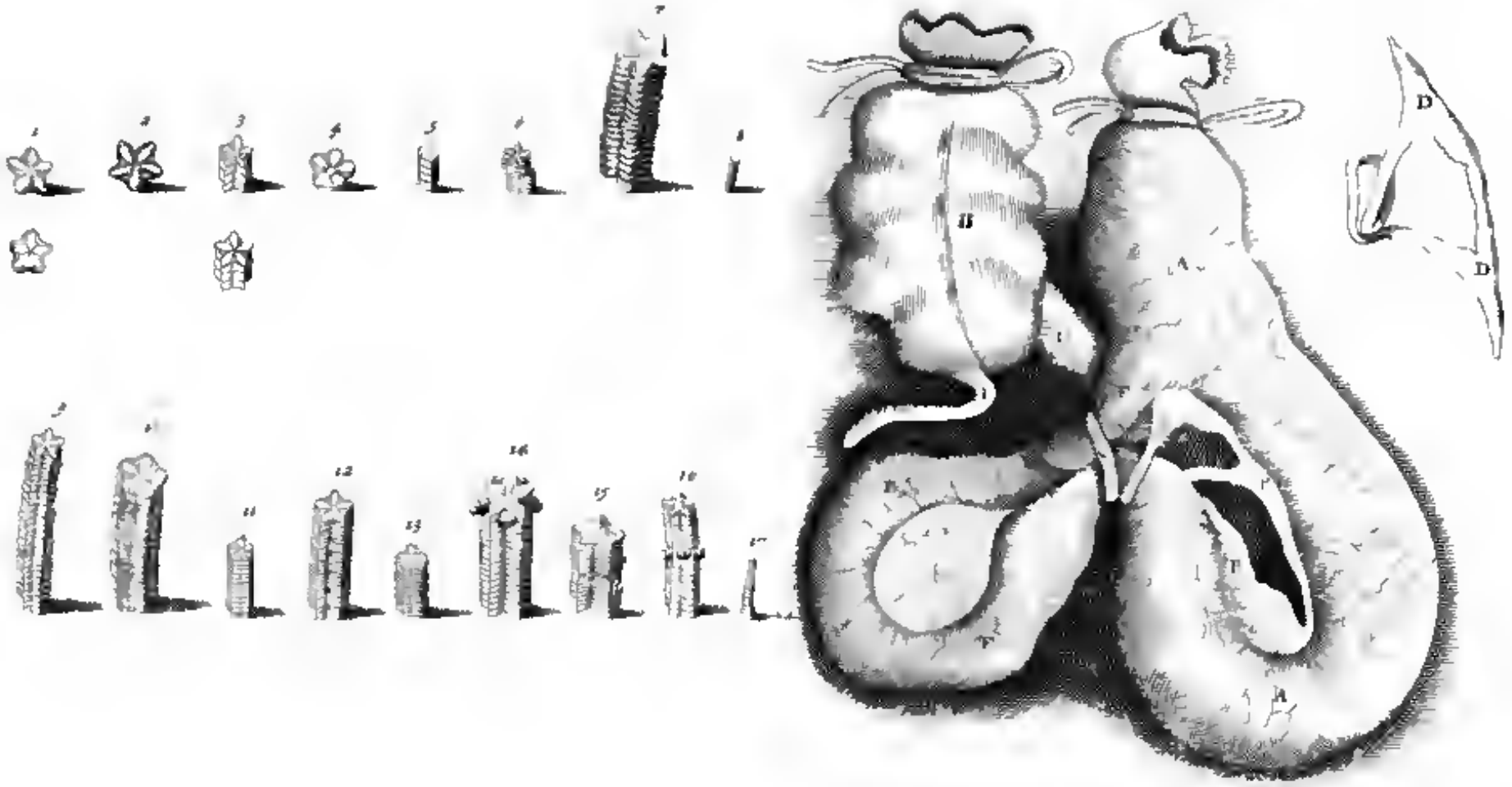






The Watch of M. Hugens

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